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that neither the variation of the plane existing in the chain of ossicles, nor the presence of the articulations, is sufficient to prevent the progress of sonorous undulations through this chain to the vestibule.

The experiments and observations detailed above lead to the following conclusions:—

1. That the commonly received opinion in favour of the sonorous undulations passing to the vestibule through the chain of ossicles is correct.

2. That the stapes, when disconnected from the incus, can still conduct sonorous undulations to the vestibule from the air.

3. So far as our present experience extends, it appears that in the human ear sound always travels to the labyrinth through two media, viz. through the air in the tympanic cavity to the cochlea, and through one or more of the ossicles to the vestibule.

VI. "On the Electrical Discharge *in vacuo* with an Extended Series of the Voltaic Battery." By John P. Gassiot, Esq., V.P.R.S. Received May 24, 1859.

In a recent communication, since ordered for publication in the Philosophical Transactions, I described some experiments on the electrical discharge in a vacuum obtained by the absorption of carbonic acid with caustic potassa, and I showed that, when the discharge from an induction coil was passed through such a vacuum, the stratifications became altered in character and appearance as the potassa was more or less heated. I have also in a former paper (Phil. Trans. 1858, p. 1) shown that the stratified discharge can be obtained from the electrical machine.

A description of an extended series of a water-battery was communicated by me as far back as December 1843 (Phil. Trans. 1844, p. 39). This battery consists of 3520 insulated cells: some years had elapsed since it was last charged, and I found the zincs were very much oxidated; on again charging it with rain-water, I ascertained that there was sufficient tension to give a constant succession of minute sparks between two copper discs attached to the terminals of the battery, and placed about $\frac{1}{8}$th of an inch apart. On attaching the terminals of the battery to the wires in a carbonic acid vacuum-tube inserted about 2 inches apart, I obtained a stratified discharge similar to that from an induction coil.

The experiment was repeated with 400 series of Grove's nitric acid battery. In this case distinct sparks between two copper discs were obtained, and the luminous layers were shown in a peculiar and striking manner, thus proving that the induction coil is not necessary for the production of the striæ, as in most of the experiments the only interruption of the battery circuit was through the vacuum-tube.

I had another tube prepared, substituting for metallic points balls of gas-carbon. At first the stratified discharge was obtained as before, while little or no chemical action took place in the battery; on heating the potassa, the character of the stratifications gradually changed, and suddenly a remarkably brilliant white discharge, *also stratified,* was observed; intense chemical action was at the same time perceptibly taking place in the battery, and on breaking the circuit, the usual vivid electrical flame-discharge was developed at the point of disruption.

The continuation of these experiments will necessarily occupy much time, involving, as they do, the charging of so extended a series of the nitric acid battery, and with the requisite care necessary for the proper insulation of each cell; other phenomena were observed which require further verification, but I hope that after the recess the result which I hope to obtain may be of sufficient interest to form the subject of a future communication.

VII. "Note on the Transmission of Radiant Heat through Gaseous Bodies." By JOHN TYNDALL, Ph.D., F.R.S. &c. Received May 26, 1859.

Before the Royal Society terminates its present session, I am anxious to state the nature and some of the results of an investigation in which I am now engaged.

With the exception of the celebrated memoir of M. Pouillet on Solar Radiation through the atmosphere, nothing, so far as I am aware, has been published on the transmission of radiant heat through gaseous bodies. We know nothing of the effect even of air upon heat radiated from terrestrial sources.